UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,671	09/12/2003	Le Trong Nguyen	SP015.C15	7577

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EXAMINER
PAN, DANIEL H

ART UNIT	PAPER NUMBER
2183	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/660,671	NGUYEN ET AL.
	Examiner	Art Unit	
	Daniel Pan	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 April 2004</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>8-42</u> is/are pending in the application.

    4a) Of the above claim(s) <u>1-7</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>8-15,17,19-26,28-37 and 39-42</u> is/are rejected.

7)☒ Claim(s) <u>16,18,27 and 38</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>30 October 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

01/23/04   01/09/04
02/17/04   09/12/03

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>02/11/05,10/20/04. 03/30/04, 03/24/04</u>

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 7-05)   Office Action Summary   Part of Paper No./Mail Date 20060302

Claims 8-42 are presented for examination. Claims 107 have been canceled.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 8 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 46 of U.S. Patent No. 6,092,181. Although the conflicting claims are not identical, they are not patentably distinct from each other because although patented claim 46 did not recite the branch detection circuit and the predication as claimed, it would have been obvious to one of ordinary skill in the art to include the branch detection and predication as claimed because patented claim recites a branch decoder (claim 46, lines 29-30), which was recognizable by one of o

ordinary skill in the art that for decoding the branch instruction a determination need to be made to recognize the branch in the branch decoder, and it should be applicable in any instruction conditions, such as predicted condition in order to provide the enhanced circuit capability.

Claim 20 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 8 of U.S. Patent No. 6,256,720 Although the conflicting claims are not identical, they are not patentably distinct from each other because although patented claim 8 did not recite the detection of conditional branch and the predication as claimed, it would have been obvious to one of ordinary skill in the art to include the detection of conditional branch because patented claim 8 taught a branch decoder (lines 11-13) and out-of-order execution (lines 22-25), and one of ordinary skill in the art should be able to recognize branch decoder should have included a determination of a branch instruction format need to be made to recognize the branch in the branch decoder, and it should be applicable in any instruction conditions, such as predicted condition in order to provide the enhanced circuit capability.

Claim 8 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 14 (claim 14 includes limitations of claim11) of U.S. Patent No. 6,647,485. Although the conflicting claims are not identical, they are not patentably distinct from each other because although patented claim 14 did not

recite the branch detection and the predication as claimed, it would have been

obvious to one of ordinary skill in the art to include the branch detection and the

prediction because patented claim also taught decoder for decoding buffered plurality of

instructions and the out-of-order instruction, and one of ordinary skill in the art should

be able to recognize the decoder for decoding plurality of instructions could be

applicable for determining the branch instruction and the respective condition for

prediction in order to enhance the system adaptability.

Claim 8 is rejected on the ground of nonstatutory obviousness-type double

patenting as being unpatentable over claim 65 of U.S. Patent No. 6, 038,654.

Although the conflicting claims are not identical, they are not patentably distinct from

each other because although patented claim 65 did not recite the detection for

conditional branch and the predication as claimed, it would have been obvious to one

of ordinary skill in the art to include the branch detection and the prediction because

patented claim taught out0oforder execution , which was a suggestion of the

applicability in branch instruction to increase the processing capability .

Claim 8 is provisionally rejected on the ground of nonstatutory obviousness-type

double patenting as being unpatentable over claim 8 of copending Application No.

10/700,485. Although the conflicting claims are not identical, they are not patentably

distinct from each other because although the copending claim8 did not recites the

branch instruction detection circuit as claimed, copending claim 8 recites the branch

prediction circuit , which was recognizable by one of ordinary skill in the art that the

prediction for the branch could have included a detection circuit for purpose of

determining the instruction type of the instruction sequence, thereby providing a specific

instruction detection for corresponding type of instruction, such as the branch .

This is a provisional obviousness-type double patenting rejection because the

conflicting claims have not in fact been patented.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1.   Claims 8-15, 19-24, 28-34, 39,40-42 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Vegesna et al. (5,488,729) in view of Hughes et al.

(4,200,927) .

2.   As to claims 8,10, 14,20, 22, 28, 30, Vegesna   disclosed a superscalar

processing system including at least :

a)a fetch circuit [IFETCH] for retrieving a plurality of instructions (see fig.19 [IFETCH],

col.22, lines 25-38, col.23, lines 45-50, col.29, lines 6-13, col.30, lines 26-32);

b)an instruction buffer that buffers the plurality of instructions from fetch circuit(see

fig.19 [DBUF], col.22, lines 25-38, col.23, lines 45-50, col.29, lines 6-13, col.30, lines

26-32);

c)plurality of functional units (see fig.18 [ALU][FAU][FMU]);

d)register file comprising at least temporary registers for storing execution results (see

fig.18, [16][26], col.20, lines 34-67, col.21, lines 1-10, col.24, lines 10-20);

c) buffer circuit for receiving instruction (see instruction buffer);

d) decoder circuit to make instructions concurrently available for execution (see

instruction decoder in fig.13) .

3.   Vegesna did not specifically show the detection circuit for detecting branch

instruction as claimed. However, Hughes disclosed a system including a decoder for

detecting conditional branch (see col.2, lines 23-31).   It would have been obvious to

one of ordinary skill in the art to use Hughes in Vegesna for including the branch

detection circuit as claimed because the use of Hughes could provide Vegesna the

ability to accept a predefined set of instruction types, such as a branch, for a given

sequence of processing , and it could be readily done by defining the branch detection

of Hughes into Vegesna with modified control parameters (e.g. the R/W ports of

branch detection circuit) such that the branch detection could be recognized by

Vegesna, and because Vegesna also taught a branch processing , though the specific

detection of branch not explicitly shown, one of ordinary skill in the art should be able

to recognize the need for detecting the branch in Vegesna 's branch decoder , and for

doing so, provided a motivation.

4.   As to claims 9,21, 29, Vegesna also included subsequent instruction to the

branch (see the instructions in fig.8).

5.   AS to claims 11, 23, 31, Vegesna also changed the control flow on the branch

condition (see branch pipeline in col.25, lines 49-67).

6.   As to claims 12, 24,32, Vegesna also included a predetermined number of

instructions fetched (see fig.30).

7.   As to claims 13, 25, 33, Vegesna also included fetch I circuit before the

decoded branch instructions (see the fetch before the execution in foig.23).

8.   As to claim 19, Vegesna also canceled instructions (see col.22, lines 39-52).

9.   As to claim 34, see the register data in fig.18 [16][26].

10.   As to claim 39, Vegesna also included taken branch prediction (see branch taken

in fig.10).

11.   AS to claims 40-42, Vegesna also included data dependencies (see fig.30 the

dependency checking).

12.   Claims 15, 17,25, 26, 35, 36, 37 are   rejected under 35 U.S.C. 103(a) as being

unpatentable over Vegesna et al. (5,488,729) in view of Hughes et al. (4,200,927) as

applied to claim 8 above, and further in view of Brown III et al. (5,394,529).

13.   As to claims 15, 17, 25, 26, 35, 36, 37, neither Vegesna nor Hughes specifically

show the retirement of the instruction as claimed. However, Brown III disclosed the

system for retiring instructions (see col.16, lines 14-28). It would have been obvious to

one of ordinary skill in the art to use Brown III in Vegesna for including e retirement of

the instruction as clamed because the use of Brown III could provide Vegesna the

capability to process the new instructions using the resources, such as the cycle time,

would have been used by the older instructions , and therefore, increasing the

processing efficiency of the system, and Vegesna also taught to cancel his instructions in the instruction buffered for invalid instructions (see col.22, lines 39-52), which would have been recognized by one of ordinary skill in the are art that a retirement of an instruction could be applied in order to maintain efficient execution order.

14.   Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the fetch circuit fetched one or more instructions of a second stream not predicted by the branch bias signal before the conditional blanch instruction was retired.

15.   Claims 18, 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the fetch circuit fetched one or more instructions of a second stream not predicted by the branch bias signal before the branch result data was confirmed by the instruction retirement circuit.

16.   Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the receiving operation completion information and result data generated during executing, the result data including branch result data generated during execution of the

conditional branch instruction; and confirming the result data on the program order and

in response to the operation completion information, wherein the step of fetching and

buffering includes fetching instructions from a second stream not predicted by the

branch bias signal prior to confirming the branch result data.

17.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

   a) Wilhelm et al. (4,991,078) is cited for the teaching of the branch on condition

(col.4, lines 15-68, col.5, lines 1-4).

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Dan Pan whose telephone number is 703 305 9696, or

the new number 571 272 4172. The examiner can normally be reached on M-F from

8:30 AM to 4:00 PM.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chan, can be reached on 703 305 9712, or the new number 571 272 4162.

The fax phone number for the organization where this application or proceeding is

assigned is 703 306 5404.

   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

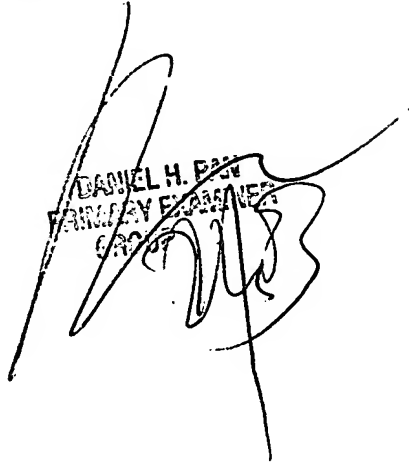Status information for unpublished applications is available through Private PAIR only.

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